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Competition and the cost of debt ☆

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ABSTRACT

This paper empirically shows that the cost of bank debt is systematically higher for firms that operate in competitive product markets. Using various proxies for product market competition, and reductions of import tariff rates to capture exogenous changes to a firm's competitive environment, I find that competition has a significantly positive effect on the cost of bank debt. Moreover, the analysis reveals that the effect of competition is greater in industries in which small firms face financially strong rivals, in industries with intense strategic interactions between firms, and in illiquid industries. Overall, these findings suggest that banks price financial contracts by taking into account the risk that arises from product market competition.

1. Introduction

Firms do not operate in isolation. They are in constant strategic interactions with other firms, struggling for customers and market shares. While some firms have the luxury of operating in less competitive product markets, others face severe competition. This intense competition fundamentally affects the firms' operating decisions and the riskiness of their business environment. While recent evidence supports the view that the intensity of competition has important implications for firms' cash flows and stock returns (Gaspar and Massa, 2006; Hou and Robinson, 2006; Irvine and Pontiff, 2009; Hoberg and Phillips, 2010a; Peress, 2010), the effect of competition on the pricing of debt has so far remained unclear. This lack of evidence is surprising. Debt is the dominant source of external finance and is crucial for firms' operating flexibility and for the financing of real investment activities. As such, it is important to understand whether and how the intensity of product market competition affects the pricing of debt. This paper aims to fill this gap and empirically investigates the relation between product market competition and spreads of bank loans.

There are a number of potential reasons why the price at which banks lend to firms depends on the competitive landscape. One reason relates to a firm's default risk. Firms with a higher default risk tend to pay higher rates

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for their loans. Since competition reduces pledgeable income and increases cash flow risk, competition could also increase firms' default risk. Moreover, firms constantly face a competitive threat from their rivals. For instance, financially strong firms could adopt aggressive competitive strategies that can significantly increase the business risk of incumbent firms (Bolton and Scharfstein, 1990). Alternatively, if firms cannot fully exploit their investment opportunities, they risk losing these opportunities and market share to rivals. In sum, the intensity of competition could increase the likelihood that firms default on their interest payments.

Another reason relates to a firm's asset liquidation value. When contracts are incomplete and transaction costs exist, liquidation values are of central importance for the pricing of debt contracts, because they provide creditors the right to possess assets when firms default on promised payments (Aghion and Bolton, 1992; Hart and Moore, 1994; Bolton and Scharfstein, 1996). As such, higher liquidation values allow firms to obtain lower rates for their loans (e.g., Benmelech, Garmaise, and Moskowitz, 2005). Since the competitive nature of the product market could affect the number and the financial strength of potential buyers and hence the asset liquidity of an industry (Ortiz-Molina and Phillips, 2011), competition could also affect the cost of bank debt by changing the firm's liquidation value.

Using a large sample of loan contracts from publicly traded U.S. firms over the years 1992–2007, I find strong empirical evidence that banks charge significantly higher loan spreads for loans to firms in competitive environments. Using the Herfindahl-Hirschman Index as a proxy for competition in three-digit Standard Industry Classification (SIC) code industries, loans in competitive industries have, on average, a spread which is 9.6% (17 basis points) higher than comparable loans in less competitive industries, controlling for other factors that affect spreads. In the sample, this difference translates into an average additional cost of debt of USD 527,000 per year. This result is robust to alternative industry classifications and empirical specifications. Specifically, I demonstrate that the result is robust to using the variable industry classification suggested by Hoberg and Phillips (2011). The result also holds when I control for a firm's credit rating, alternative proxies of default risk, lender fixed effects, firms' market share, stock returns, and anti-takeover provisions. Across all of these specifications, I uncover a substantial positive relation between the intensity of competition and loan spreads. These findings corroborate the main result and cast doubt on potential alternative explanations. Moreover, the results suggest that competition captures risk arising from the firm's competitive environment that goes above and beyond the risk captured by traditional proxies of default risk.

Next, in order to mitigate endogeneity concerns that financing choices impact industry structure, I follow Frésard (2010) and measure *changes* in the intensity of competition using exogenous reductions of industry-level import tariff rates. The idea is that unexpected reductions of trade barriers facilitate the penetration of foreign rivals into local markets and trigger an intensification of firms' competitive environment (Bernard, Jensen, and Schott, 2006). Using tariff data for the U.S. manufacturing sector, I identify 54 industries that experience a large import tariff rate reduction between 1992 and 2005. While average tariff rates decrease from 3% to below 1.5% in these industries, import penetration significantly increases from 19.5% to 24.1%. As such, these tariff rate reductions facilitate the entrance of foreign rivals and increase the intensity of competition for domestic firms. Using these tariff rate reductions as a proxy for a sudden increase in the competitive pressure that firms face (competitive shock), the estimations reveal that these reductions in import tariff rates cause an increase in spreads by 15% to 22%. Moreover, I find that the effect of a competitive shock is significantly larger for firms operating in concentrated industries and for firms *not* protected by other barriers to entry. These ancillary results further support the main finding and the use of this quasi-natural experiment setting.

In a next step, I use the cross-sectional dimension of the sample to examine how the effect of competition differs across industries and to further understand the nature and potential drivers of the effect. In particular, I explore how the difference between a firm and its rivals' financial status and the intensity of interactions within industries change the effect of competition on spreads. Consistent with the idea that the exposure to "competitive risk" depends on the difference between a firm and rivals' financial strength, I observe that the relation between competition and spreads is magnified when small firms face financially strong rivals. This result is consistent with a potential within-industry effect of competition as in Bolton and Scharfstein (1990). Moreover, the effect of competition on spreads is higher when the amount of strategic interactions within industries is high. I also investigate the extent to which the effect of competition depends on an industry's specificity and illiquidity of assets. The evidence points to noticeable differential effects. Specifically, the effect of competition on spreads is significantly larger in illiquid industries. As such, this result supports and complements recent findings that asset liquidity is an important determinant of firms' cost of capital (Ortiz-Molina and Phillips, 2011). Overall, consistent with the idea that banks price "competitive risk", the impact of competition on spreads is significant and multifaceted.

This paper makes two main contributions to the literature. First, the paper provides evidence to support the view that product and financial markets have important linkages. While previous papers study, among others, the relation between industry structure and the quantity of debt (MacKay and Phillips, 2005; Xu, 2011), cash holdings (Morellec and Nikolov, 2008), or the cost of equity (Hou and Robinson, 2006; Hoberg and Phillips, 2010a), this paper focuses on the *pricing* of debt. Taken as a whole, the effect of competition on debt pricing appears to be substantial and to depend on both rivals' financial strength and industry structure. In particular, the results suggest that firms which hold a leading position in industries not only have access to cheaper financing, but could also increase the cost of financing for their rivals.